

**SLOVENSKI STANDARD**  
**SIST EN 50399:2011/A1:2016**  
**01-september-2016**

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**Skupne preskusne metode za ognjevzdržnost kablov - Meritve oddajanja toplote in nastajanja dima na kablilih med preskusom z razpršenim plamenom - Preskusna naprava, postopki, rezultati - Dopolnilo A1**

Common test methods for cables under fire conditions - Heat release and smoke production measurement on cables during flame spread test - Test apparatus, procedures, results

Allgemeine Prüfverfahren für das Verhalten von Kabeln und isolierten Leitungen im Brandfall - Messung der Wärmeabsetzung und Raucherzeugung während der Prüfung der Flammenausbreitung - Prüfeinrichtung, Prüfverfahren und Prüfergebnis

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Méthodes d'essai communes aux câbles soumis au feu - Mesure de la chaleur et de la fumée dégagées par les câbles au cours de l'essai de propagation de la flamme - Appareillage d'essai, procédure et résultats

**Ta slovenski standard je istoveten z: EN 50399:2011/A1:2016**

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**ICS:**

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
29.060.20	Kabli	Cables

**SIST EN 50399:2011/A1:2016** en

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EUROPEAN STANDARD

EN 50399:2011/A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2016

ICS 13.220.40; 29.060.20

English Version

## Common test methods for cables under fire conditions - Heat release and smoke production measurement on cables during flame spread test - Test apparatus, procedures, results

Méthodes d'essai communes aux câbles soumis au feu -  
Mesure de la chaleur et de la fumée dégagées par les  
câbles au cours de l'essai de propagation de la flamme -  
Appareillage d'essai, procédure et résultats

Allgemeine Prüfverfahren für das Verhalten von Kabeln und  
isolierten Leitungen im Brandfall - Messung der  
Wärmefreisetzung und Raucherzeugung während der  
Prüfung der Flammenausbreitung - Prüfeinrichtung,  
Prüfverfahren und Prüfergebnis

This amendment A1 modifies the European Standard EN 50399:2011; it was approved by CENELEC on 2016-04-18. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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## European foreword

This document (EN 50399:2011/A1:2016) has been prepared by CLC/TC 20 "Electric cables".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2017-04-18
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2019-04-18

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**EN 50399:2011/A1:2016****1 Modification to Clause 2, Normative references**

*Replace the whole reference to EN 60332-3-10 with the following one:*

"EN 60332-3-10:2009, *Tests on electric and optical fibre cables under fire conditions – Part 3-10: Test for vertical flame spread of vertically-mounted bunched wires or cables – Apparatus (IEC 60332-3-10:2000)*".

**2 Modification to 6.4, Determination of the number of test pieces**

*Replace the whole subclause with the following one:*

"

**6.4 Determination of the number of test pieces****6.4.1 General**

The following formulae shall be used to determine the number of test pieces ( $N$ ) for the test.

**6.4.2 Circular cables with a diameter greater than or equal to 20,0 mm**

The number of test pieces,  $N$ , is given by:

$$N = \text{int} \left( \frac{300 + 20}{d_c + 20} \right) \quad (1)$$

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where

$d_c$  is the measured diameter of the cable (in millimetres, measured to one decimal place of a millimetre and rounded to the nearest millimetre according to Annex J);

int function the integer part of the result (i.e. the value rounded down).

**6.4.3 Circular cables with a diameter greater than 5,0 mm but less than 20,0 mm**

The number of test pieces,  $N$ , is given by

$$N = \text{int} \left( \frac{300 + d_c}{2d_c} \right) \quad (2)$$

where

$d_c$  is the measured diameter of the cable (in millimetres, measured to one decimal place of a millimetre and rounded to the nearest millimetre according to Annex J);

int function the integer part of the result (i.e. the value rounded down).

#### 6.4.4 Circular cables with a diameter less than or equal to 5,0 mm

A number of approximately 10 mm diameter bundles ( $N_{bu}$ ) shall be mounted where:

$$N_{bu} = \text{int}\left(\frac{300+10}{20}\right) = 15 \quad (3)$$

Thus 15 bundles shall be mounted.

The number of test pieces in each bundle ( $n$ ) is:

$$n = \text{int}\left(\frac{100}{d_c^2}\right) \quad (4)$$

where

$d_c$  is the measured diameter of the cable (in millimetres, measured to two decimal places of a millimetre and rounded to one decimal place according to Annex J);

int function the integer part of the result (i.e. the value rounded down).

The total number of test pieces ( $N$ ) will thus be:

$$N = n \times 15 \quad (5)$$

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#### 6.4.5 Non-circular cables with a major axis dimension greater than or equal to 20,0 mm, a minor axis dimension greater than 4,0 mm and a major to minor axis ratio less than or equal to 5

The number of test pieces,  $N$ , is given by:

$$N = \text{int}\left(\frac{300+20}{m_c+20}\right) \quad (6)$$

where

$m_c$  is the measured major axis of the cable (in millimetres, measured to one decimal place of a millimetre and rounded to the nearest millimetre according to Annex J);

int function the integer part of the result (i.e. the value rounded down).

**EN 50399:2011/A1:2016****6.4.6 Non-circular cables with a major axis dimension greater than 5,0 mm but less than 20,0 mm, a minor axis dimension greater than 4,0 mm and a major to minor axis ratio less than or equal to 5**

The number of test pieces,  $N$ , is given by:

$$N = \text{int} \left( \frac{300 + m_c}{2m_c} \right) \quad (7)$$

where

$m_c$  is the measured major axis of the cable (in millimetres, measured to one decimal place of a millimetre and rounded to the nearest millimetre according to Annex J);

int function the integer part of the result (i.e. the value rounded down).

NOTE For non-circular cables outside the dimensional and major to minor axis ratios given in 6.4.5 and 6.4.6, no mounting procedure has been defined.

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**3 Modification to 6.5.1, Mounting of the test sample for all classes**

*Replace the content of the subclause with:*

”

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The test sample shall be mounted on the front of the standard ladder. The lower part of each test piece or bundle of test pieces shall extend between 200 mm and 300 mm under the lower edge of the burner face, dependent on their actual length, such that  $(3\ 300^{+25}_0)$  mm of the cables are above the lower edge of the burner face. Non-circular cables shall be mounted such that the major axis is presented to the burner face.

NOTE 1 The positive tolerance on the test sample length is to aid fixing on the ladder rung below the burner.

Each test piece or bundle of test pieces shall be attached individually to each rung of the ladder by means of a metal wire (steel or copper) using the crossed wire method of fixing shown in EN 60332-3-10:2009, Figure 3. For bundles, apply a metal wire around the bundle at each rung position before attaching the bundle to the rung with a further wire.

For cables up to and including 50 mm diameter (or major axis dimension for non-circular cables), wire between 0,5 mm and up to and including 1,0 mm in diameter shall be used. For cables above 50 mm diameter (or major axis dimension for non-circular cables), wire between 1,0 mm and 1,5 mm in diameter shall be used.

It is recommended that a drilled plate be used as a guide to maintain the relative position of each test piece when installing a bundle of test pieces.

For bundles, apply an intermediate metal wire (steel or copper) approximately midway between each rung of the ladder, as shown in Figure 9. Each metal wire shall be applied using two turns around the bundle.



When mounting the test pieces, the first test piece or bundle of test pieces shall be positioned approximately in the centre of the ladder and further test pieces shall be added on either side so that the whole array of test pieces is approximately centred on the ladder.

Whilst attaching the test pieces to the rungs of the ladder by means of a metal wire, the test pieces shall be maintained under tension to ensure they are set parallel on the ladder.

NOTE 2 It is useful for additional information to draw, at each height of 25 cm, a horizontal line in order to estimate the flame spread as a function of time, with the first line (i.e. zero line) at the same height as the burner.

The test pieces shall be mounted according to the cable overall diameter (or major axis dimension for non-circular cables), in accordance with Table 1.

**Table 1 – Mounting as a function of cable diameter (or major axis dimension for non-circular cables)**

Cable diameter (circular cables)	Mounting
Larger than or equal to 20,0 mm	20 mm spacing between cables
Between 5,0 mm and 20,0 mm	One cable diameter spacing between cables.
Less than or equal to 5,0 mm	The cables shall be bundled in bundles of approximately 10 mm diameter. The bundles shall not be twisted. The spacing between bundles shall be 10 mm.
Cable major axis dimension (non-circular cables)	(standards.iteh.ai)
Larger than or equal to 20,0 mm	20 mm spacing between cables
Between 5,0 mm and 20,0 mm	One cable major axis dimension spacing between cables.

#### 4 Modification to 6.5.2, Special mounting requirements for class B1<sub>ca</sub>

At the end of the 2<sup>nd</sup> paragraph, **replace** "Figure 9" with "Figure 10".

#### 5 Modifications to the figures after 8.2.5

Between Figures 8 and 9, **add** the following Figure 9: